Remarks/Arguments:

Claims 1-5 have been amended. Claims 6-10 have been added. No new matter is introduced herein. Claims 1-10 are pending.

Support for the amendment to claim 1 can be found at, for example, page 9, line 18-page 10, line 15; page 11, line 6-page 12, line 10, and Figs. 3 and 4 of the original specification. Claims 2, 3, and 5 have been amended to clarify the language. Claim 4 has been amended to depend from claim 1 and to clarify the language. Support for the amendment to claim 4 can be found at, for example, page 13, line 6-page 14, line 2, and Fig. 5 of the original specification.

Claim 2 has been objected to as failing to recite a positive method step. Claim 2 has been amended to clarify the relationship between the predetermined impedance characteristic and the first and second inflection points. Support for the amendment to claim 2 can be found, for example, at page 10, lines 7-23, and Fig. 3 of the original specification. Accordingly, Applicants respectfully request that the objection to claim 2 be withdrawn.

Claims 1-5 have been rejected under 35 U.S.C. §102(b) as being anticipated by Miller et al. (U.S. Pat. No. 6,151,969). It is respectfully submitted, however, that these claims are now patentable over the cited art for the reasons set forth below.

Claim 1, as amended, includes features neither disclosed nor suggested by the cited art, namely:

> ...measuring a characteristic value of the capacitor by applying an AC voltage to the capacitor at a measurement frequency...
>
> ...comparing the measured characteristic value with a predetermined characteristic value to determine the deterioration of the capacitor...
>
> the predetermined characteristic value selected from a predetermined impedance characteristic at the measurement frequency, the predetermined impedance

> characteristic corresponding to the deterioration of the electrolytic solution...
>
> ...the measurement frequency is selected to be less than a frequency corresponding to an inflection point formed in the predetermined impedance characteristic... (Emphasis added)

Miller et al. disclose, in Fig. 1A, an electrochemical transducer cell 10 that uses a material under test as a working electrode in order to measure an electrochemical impedance and an electromechanical impedance. The impedance is used to detect and analyze fatigue damage to the material (Col. 3, lines 6-42). For an electrochemical impedance measurement, a sinusoidal signal is applied to the material under test over a range of frequencies to obtain an impedance spectrum (Col. 4, lines 29-34). Figs. 4A and 4B of Miller et al. show Nyquist and Bode plots, respectively, of electrochemical impedance responses of an aircraft aluminum alloy during progressive state of mechanical fatigue damage (Col. 6, line 63-Col. 7, line 16).

Miller et al. do not disclose or suggest Applicants' claim features of "comparing the measured characteristic value with a predetermined characteristic value to determine the deterioration of the capacitor", where the predetermined characteristic value is "selected from a predetermined impedance characteristic at the measurement frequency... corresponding to the deterioration of the electrolytic solution" (emphasis added). Miller et al. further do not disclose or suggest that the measurement frequency is "selected to be less than a frequency corresponding to an inflection point formed in the predetermined impedance characteristic" (emphasis added). These features are neither disclosed nor suggested by Miller et al. Miller et al. assess a fatigue status of a material. Miller et al. are silent on comparing measured and predetermined impedance values to determine a deterioration of the capacitor based on the electrolytic solution. In addition, Miller et al. are silent on selecting a measurement frequency that is less than an inflection point frequency formed in a predetermined impedance characteristic.

As discussed above, Miller et al. disclose a method to electromechanically and electrochemically measure fatigue damage of a material and further discloses a result of the measurement of a material, an aluminum alloy, in Fig. 4B. The method shown in

Fig. 4B has no relation with the electrochemical measurement of the subject invention. Instead, the method of Miller et al. relates to a mechanical characteristic property of the material and used to determine the modulus of a material that has a viscoelasticity. As is known to the skilled person, viscoelasticity means that the material has both a viscostic and an elastic property. Typically, materials, for example plastic materials, have a viscoelasticity. If a material only has elasticity, a vibration applied to one end of the material is transferred to another end without a time delay. However, if the material, such as a plastic material, also has a viscostic property, the vibration is transferred to the other end with a time delay, as shown in Figs. 3A and 3B of Miller et al.

The measurement disclosed by Miller et al. measures the time delay, or the phase shift. This measurement of the modulus result is expressed by the "impedance" as shown in Fig. 4B of Miller et al. However, the "impedance" shown in Fig. 4B does not include an impedance unit or it is shown by the absolute value. The "impedance" shown in Fig. 4B represents an internal mechanical loss of the material. In contrast, the "impedance" used in the present invention is an electrical resistance to the AC voltage. This is completely different from the "impedance" shown by Fig. 4B of Miller et al. Therefore, Miller et al. do not include all of the features of claim 1. Accordingly, allowance of claim 1 is respectfully requested.

Claims 2-5 include all of the features of claim 1 from which they depend. Accordingly, claims 2-5 are also patentable over the cited art.

Claims 6-10 have been added. No new matter is introduced herein. New claim 6 includes features similar to claim 1. In addition, claim 6 includes the step of displaying the deterioration of the capacitor. Support for claim 6 can be found, for example, at page 7, lines 10-12; page 12, lines 6-10; and Figs. 1 and 4 of the original specification. Claims 7-10 are similar to respective claims 2-5. Accordingly, claims 6-10 are patentable over the cited art.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

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Beth Johnson

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